

## VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a major, industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the production of polyester resin and film. This permit action consists of updating special conditions and effluent limitations and monitoring.

1. Facility Name and Address: DuPont Teijin Films  
(Mailing Address is the same) 3600 Discovery Drive  
Chester, VA 23836  
  
SIC Codes: 3081 – Polyester Film Manufacture  
2821 – Polyester Polymer Resin Manufacture
2. Permit No. VA0003077 Expiration Date: September 14, 2016
3. Owner: Du Pont Teijin Films U.S. Limited Partnership  
(DBA DuPont Teijin Films)  
Contact: Mark W. Allen, Plant Manager  
804-530-9825  
[Mark.W.Allen@usa.dupont.com](mailto:Mark.W.Allen@usa.dupont.com)  
  
Permit/Facility Contact: Jennifer Forstner, Environmental Engineer  
804-530-9844  
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4. Application Complete Date: April 21, 2016  
Permit Drafted By: Shawn Weimer July 17, 2016  
DEQ Regional Office: Piedmont Regional Office  
Reviewed By: Joseph Bryan July 20, 2016  
Kyle Winter July 21, 2016  
  
Public Comment Period Dates: August 10, 2016 – September 9, 2016  
Receiving Waters Classification:

5. Table 1 – Receiving Stream and Outfall Information

OUTFALLS	001	002	003	004	901
Receiving Stream	James River	James River	James River	James River	James River
Lat/Lon	37° 21' 18.0"; -77° 17' 47.7"	37° 21' 18.6"; -77° 17' 50.4"	37° 21' 16.2"; -77° 17' 40.6"	37° 21' 16.5"; -77° 17' 39.6"	37° 21' 18.0"; -77° 17' 47.7"
Basin	James River	James River	James River	James River	James River
Subbasin	NA	NA	NA	NA	NA
Section	1o	1o	1o	1o	1o
Class	II	II	II	II	II
Special Standards	PWS	PWS	PWS	PWS	PWS
River Mile	2-JMS086.36	2-JMS086.40	2-JMS086.25	2-JMS086.25	2-JMS086.36

OUTFALLS	001	002	003	004	901
Tidal*	Yes	Yes	Yes	Yes	Yes
303(d) list	Yes Category 5D**	Yes Category 5D**	Yes Category 5D**	Yes Category 5D**	Yes Category 5D**

\*The James River is tidally influenced at the discharge points. Flow frequencies cannot be determined for tidal waters; therefore, the previously determined dilution ratios should continue to be used to evaluate the effluent's impact on the water body.

\*\* Category 5D means The Water Quality Standard is not attained where TMDLs for a pollutant(s) have been developed but one or more pollutants are still causing impairment requiring additional TMDL development.

See **Attachment A** for Flow Frequency Memo.

6. Operator License Requirements: The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collection and Treatment (SCAT) Regulations 9 VAC 25-790 et seq. A Class IV licensed operator is required for the sewage treatment plant. Although, the SCAT regulations are not applicable to industrial wastewater treatment plants, a Class III licensed operator was required for the process wastewater treatment plant in the 2011 permit. This requirement is carried forward in the 2016 permit reissuance based on Professional Judgement.
7. Reliability Class: Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure. The permittee is required to maintain Class I Reliability for the sewage treatment facility on-site.
8. Permit Characterization:
 

<input type="checkbox"/> Issuance <input checked="" type="checkbox"/> Reissuance <input type="checkbox"/> Revoke & Reissue <input type="checkbox"/> Owner Modification <input type="checkbox"/> Board Modification <input type="checkbox"/> Change of Ownership/Name Effective Date: <input type="checkbox"/> Municipal SIC Code(s): <input checked="" type="checkbox"/> Industrial SIC Code(s):3081, 2821 <input type="checkbox"/> POTW <input type="checkbox"/> PVOTW <input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> State	<input checked="" type="checkbox"/> Existing Discharge <input type="checkbox"/> Proposed Discharge <input checked="" type="checkbox"/> Effluent Limited <input checked="" type="checkbox"/> Water Quality Limited <input type="checkbox"/> WET Limit <input type="checkbox"/> Interim Limits in Permit <input type="checkbox"/> Interim Limits in Other Document (attached) <input type="checkbox"/> Compliance Schedule Required <input type="checkbox"/> Site Specific WQ Criteria <input type="checkbox"/> Variance to WQ Standards <input type="checkbox"/> Water Effects Ratio <input checked="" type="checkbox"/> Discharge to 303(d) Listed Segment <input checked="" type="checkbox"/> Whole Effluent Toxicity Program Required <input type="checkbox"/> Toxics Reduction Evaluation <input type="checkbox"/> Possible Interstate Effect <input checked="" type="checkbox"/> Stormwater Management Plan
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9. Schematic of wastewater treatment system: See **Attachment B** for facility diagrams and a summary of operations at each outfall.

Table 2 - Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT UNITS	MAX 30-Day AVG FLOW
001	Cooling Tower Blowdown, Steam Boiler Blowdown, Stormwater Runoff, Cooling Water, Miscellaneous Flows (including Chilled Water and Fire Suppression Makeup Water from weekly pump checks), and Outfalls 101 and 102	Described at the outfalls listed below	201,600 GPD (DMR Data)
901	Outfall 001 during wet weather events	None	706,400 GPD (DMR data)
101	Internal Outfall: Industrial Wastewater Treatment Plant (IWWTP) - process water and annual groundwater monitoring rinse and purge water	Flow equalization, pH adjustment, screening, extended aeration activated sludge, and membrane filtration	36,000 GPD design flow 42,400 GPD (DMR Data)
102	Internal Outfall: Sanitary Wastewater Treatment Plant (SWWTP)	Screening, flow equalization, extended aeration activated sludge, sedimentation and chlorine disinfection	9,000 GPD design flow* 7,000 GPD Max 30 day average (DMR Data)
002	Stormwater Runoff	NA (normally to 001)	10,000 (gallons per year) (Form 2C)
003	Stormwater Runoff, Cooling Tower Blowdown, Steam Boiler Blowdown, and Fire Suppression Makeup Water from weekly pump checks	NA (normally to 001)	54,068 GPD (Form 2C)
004	Stormwater Runoff	NA	143,000 GPD (DMR Data)

\*Prior to July 2003, the sewage treatment facility consisted of two plants in parallel; one 8,750 GPD and one 9,000 GPD for a total of 17,750 GPD. In July 2003, the 8,700 GPD plant was taken off-line due to the low flows entering the plant.

This facility uses ethylene glycol and terephthalic acid (TA) to produce a polyester resin. Towards the beginning of the 2011 permit term, the facility was also using dimethyl terephthalate (DMT) as a raw material and a DMT-based process to produce the majority of the resin. The facility no longer uses the DMT-based polymer process. A TA-based polymer process is currently used. As noted in the 2011 fact sheet, the TA-based polymer process was not expected to introduce new pollutants; however, it was expected to add additional hydraulic load to the IWWTP and change the character of the influent wastewater. Because characterization of the wastewater was not available prior to issuance of the 2011 permit, a special condition requiring monitoring at Outfall 001 for all parameters in the WQS was included in the 2011 permit. The results of that monitoring were received by DEQ on September 27, 2012. An evaluation of the results was completed and a reasonable potential did not exist for the observed pollutant concentrations. In a separate process, the resin is extruded into a sheet (film) which is then cut to customer specifications, packaged, and shipped. Wastewater from this process is treated at an onsite process wastewater treatment plant. Sanitary wastewater generated at the facility is treated at an onsite sanitary wastewater treatment plant.

10. Sludge Use or Disposal: Process wastewater sludge is dewatered by centrifuge and hauled to the Shoosmith Landfill in Chesterfield for disposal. Sanitary wastewater sludge is transferred to the waste sludge holding tanks where it is aerated and allowed to settle. Clear liquid is decanted off of the holding tanks and transferred to the aeration basins. This process continues until no more decant water can be added to the holding tanks without solids. Once this occurs, liquid sludge is hauled by private contractor to the City of Hopewell Regional Wastewater Treatment Facility (HRWTF), VPDES Permit No. VA0066630 where it is mixed with the city's domestic wastewater and disinfected using sodium hypochlorite. Further treatment and dewatering of the sludge occurs at HRWTF by centrifuge followed by incineration. Ash from incineration is transported to the Shoosmith Landfill in Chesterfield County for disposal. The sludge is transported in a truck from DuPont Teijin Films to HRWTF - approximately 5 miles along the following route: Discovery Drive → Left on Bermuda Hundred Road → Right on Allied Road → Left on State Route 10 → Left on Hummel Ross Road.
11. Discharge(s) Location Description: Hopewell Topographic Map, #99D. See **Attachment C** for the facility location map.
12. Material Storage: In Form 2F the facility stated that no significant materials are currently stored in a manner that allows exposure to stormwater. Annual application of pesticide and slow release fertilizer is performed during dry weather and in accordance with product instructions. Herbicides are applied once a year or as needed during dry weather conditions.
13. Ambient Water Quality Information: The ambient water quality information for the James River was obtained from monitoring station 2-JMS087.01, located less than 1 mile upstream of the outfalls at Buoy 137 on the James River. The river is designated as tidal freshwater in the Virginia Water Quality Standards; therefore, the Aquatic Life Use freshwater criteria should be applied. The receiving stream is designated as Public Water Supply. See **Attachment A** for ambient stream data.

In the 2014 305(b)/303(d) Integrated Water Quality Assessment, the segment of the river to which DuPont Teijin Films discharges was assessed as a Category 5D water ("The Water Quality Standard is not attained where TMDLs for a pollutant(s) have been developed but one or more pollutants are still causing impairment requiring additional TMDL development.") The applicable fact sheets are included in **Attachment A**. The Aquatic Life Use is impaired due to inadequate submerged aquatic vegetation (SAV), chlorophyll *a* criteria exceedances, and altered benthic community. The Recreation Use is impaired due to *E. coli* exceedances. The Fish Consumption Use is impaired due to a VDH fish advisory for PCBs and due to exceedances of the WQS for PCBs; in addition, arsenic, mercury and kepone are considered non-impairing "observed effects". The Public Water Supply Use is impaired due to PCBs in the water column. As indicated in Form 2C of the application, PCBs were not observed in the process water effluent at Outfall 001. The Wildlife Use is fully supporting.

The James River and Tributaries - City of Richmond Bacterial TMDL was approved by the EPA on 11/4/2010 and by the State Water Control Board (SWCB) on 6/29/2012. The TMDL initially assigned DuPont Teijin Films an *E. coli* wasteload allocation (WLA) of 1.74E+12 cfu/year based on a design flow rate of 1.38 MGD. However, the facility subsequently reduced their flow to 0.009 MGD and the WLA was reduced to 1.57E+10 cfu/year through an interim "track-and-roll" modification. The available load was reallocated to future growth in the watershed. A limitation is assigned at Outfall 102 for 126 N/100mL to assure compliance with the TMDL. In addition, monitoring at Outfall 001 will continue to be performed annually.

DuPont Teijin Films was also addressed in the Chesapeake Bay TMDL, which was approved by the EPA on 12/29/2010. The TMDL allocates loads for total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) to protect the dissolved oxygen (DO) and SAV criteria in the Chesapeake Bay and its tidal tributaries. The facility was included in the aggregated loads for non-significant wastewater dischargers in the upper tidal freshwater James River estuary (JMSTF2). The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

Implementation of the Chesapeake Bay TMDL is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP), approved by EPA on December 29, 2010. The approved WIP recognizes the "General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia" (9 VAC 25-820) as controlling the nutrient allocations for non-significant Chesapeake Bay dischargers. The approved WIP states that for non-significant Municipal and Industrial facilities, nutrient WLAs are to be consistent with Code of Virginia procedures, which set baseline WLAs to 2005 permitted design capacity nutrient load levels. In accordance with the WIP, TN and TP WLAs for non-significant facilities are considered aggregate allocations and will not be included in individual permits. The WIP also considers TSS WLAs for non-significant facilities to be aggregate allocations, but TSS limits are to be included in individual VPDES permits in conformance with the technology-based requirements of the Clean Water Act. However, the WIP recognizes that so long as the aggregated TSS permitted loads for all dischargers is less than the aggregated TSS load in the WIP, the individual permit will be consistent with the TMDL. TSS loading limitations of 100 kg/d monthly average and 170 kg/d monthly maximum are included in the permit and are performance-based limitations calculated in a previous reissuance that have been carried forward.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet the WQS and to be consistent with the assumptions and requirements of applicable WLAs. This facility is classified as a non-significant Chesapeake Bay discharger because it has a permitted design capacity flow, or equivalent load, of less than 100,000 gallons per day into tidal waters. This facility has not made application for a new or expanded discharge since 2005. It is therefore covered by rule under the 9 VAC 25-820 regulation.

The individual permit has CBOD<sub>5</sub> loading limitations of 69 kg/d monthly average and 152 kg/d monthly maximum. CBOD<sub>5</sub> is also addressed in the Richmond Crater Water Quality Management Plan (RCWQMP), but the CBOD<sub>5</sub> limitations in the permit were developed prior to establishment of the RCWQMP and have been carried forward to avoid backsliding. The permit includes ammonia loading limitations of 3600 g/d monthly average and 7300 g/d monthly maximum which are based on the RCWQMP. DO limitations are consistent with the RCWQMP and provide protection of instream DO concentrations to at least 5.0 mg/L. However, implementation of the full Chesapeake Bay WIP, including GP reductions combined with actions proposed in other source sectors, is expected to adequately address ambient conditions such that the proposed effluent limits of this individual permit are consistent with the Chesapeake Bay TMDL, and will not cause an impairment or observed violation of the standards for DO, chlorophyll a, or SAV as required by 9 VAC 25-260-185.

The stormwater discharges managed through this permit are considered part of the aggregated WLAs for regulated stormwater discharges. The stormwater outfalls covered by this permit are not subject to the technology-based TSS requirement of the Clean Water Act; therefore, technology-based TSS limitations are not required. As the TSS and nutrient content of stormwater discharges authorized by this permit are provided for in aggregated loads under the TMDL, the discharges are in conformance with the TMDL. In accordance with GM 14-2011, non-significant dischargers are subject to aggregate WLAs for TN, TP, and Sediments under the Total Maximum Daily Load (TMDL) for Chesapeake Bay. The required nutrient monitoring at Outfalls 901 and 004 are included in the permit.

14. Antidegradation Review & Comments:

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The limitations in this permit were developed in accordance with § 303(d)(4) of the Clean Water Act. Therefore, antidegradation restrictions do not apply.

The antidegradation review begins with a Tier determination. The river is considered a Tier 1 water. This determination is based on the RCWQMP, 9 VAC 25-720-60, which allocates carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>) and ammonia in order to maintain a minimum DO of 5.0 mg/L in the river. The permit reissuance addresses an existing discharge. The waterbody is therefore, classified as Tier 1.

15. Site Visit: A site visit was performed by Shawn Weimer on March 25, 2016. See **Attachment D** for the site visit memo.
16. Effluent Screening and Limitation Development:

Reasonable Potential Analysis:

If it is determined that a pollutant does or may exist in effluent, a Reasonable Potential Analysis must be conducted in order to determine if it is statistically probable that the effluent may cause or contribute to a violation of the instream acute and chronic criteria contained in the Virginia Water Quality Standards (9 VAC 25-260 et seq.). The first step of the analysis is determining the maximum concentration which will maintain the abovementioned criteria. This concentration is known as a wasteload allocation (WLA). The WLA is calculated in a DEQ spreadsheet called MSTRANTI, which calculates WLAs from receiving stream and effluent data for flow, water quality, and mixing during critical low flow conditions. The second step of the analysis requires inserting the acute and chronic WLAs and pollutant concentration data submitted by the permittee into another computer application called STATS. Based on the entered effluent data, STATS calculates the daily, 4-day, and/or 30-day 97th percentiles from the lognormal distribution of the data and compares them to the WLAs. The 97th percentile value is used to determine if there is reasonable potential to cause WQS violations, and if necessary, the appropriate limitation to prevent those violations. The output from the STATS application will indicate the need for a permit limitation and establish that limitation if needed.

Outfall 001

Effluent limitations for parameters submitted with the application were evaluated in accordance with the guidance memo 00-2011 and its amendments. Reasonable potential analyses were performed using MSTRANTI and STATS. Dilution ratios of 83.33:1 acute and 625:1 chronic were used in MSTRANTI as follows:

83.33: 1 acute → A design flow of 1 MGD and 1Q10 flow of 82.33  
625:1 chronic → A design flow of 1 MGD and 7Q10 flow of 624

These dilution ratios were obtained from the mixing zone analysis performed by We-Seng Lung, PhD, PE, in December 1998 for the facility. See **Attachment F** for the Lung Model. Any parameter that was reported as less than an acceptable quantification limit (QL) was not evaluated since those parameters are treated as absent in the discharge. Only those parameters that produced a result above the associated QL were evaluated; these parameters are listed in the Table below. Reasonable potential analyses for the parameters with aquatic standards were performed using STATS to evaluate the need for a limitation to protect against aquatic toxicity. For parameters with standards based on Human Health (HH), the maximum observed values were compared to the HH WLAs calculated in MSTRANTI. All of the observed human health values were several orders of magnitude less than the WLAs; therefore, no limitations are needed for these parameters based on human health. Pollutants without an applicable standard cannot be evaluated at this time.

Radionuclides:

In the application, the values reported for beta particle and photon activity are in units of concentration (pCi/L) whereas the applicable WQS is an exposure expressed as mrem/yr. The EPA has established this same standard for community potable water systems (4 mrem/yr). Federal Regulation (40 CFR Part 141) states that compliance with the potable water standard may be assumed if the average annual concentration of beta particle and photon activity is less than 50 pCi/L. As indicated in Table 3 below, compliance with this standard is achieved.

Table 3 – Outfall 001 Application Data and Reasonable Potential Summary

Observed Pollutant	Max Observed Concentration	Aquatic WLA		Human Health WLA		Reasonable Potential
		Acute	Chronic	PWS	All Others	
BOD (mg/L)	10					N/A
COD (mg/L)	172					N/A
TOC (mg/L)	45.6					N/A
TSS (mg/L)	104					N/A
Ammonia (mg/L)	1.9	573	461			NO
TRC (mg/L)	0.10	1.6	6.9			YES
Color (pcu)	55					N/A
Fecal coliform (MPN/100mL)	23					N/A
Fluoride (mg/L)	0.14					N/A
Nitrate + Nitrite (mg/L)	1.81					N/A
Nitrogen, Total Organic (mg/L)	2.61					N/A
Phosphorus, Total (mg/L)	1.26					N/A
Alpha, Total (pCi/L)	1.47			9400		NO
Beta, Total (pCi/L)	5.782			2500 mrem/yr [50 pCi/L]		NO
Radium, Total (pCi/L)	0.537					N/A
Radium226, Total (pCi/L)	1.18			3100		NO
Sulfate (mg/L)	90			160,000		NO
Total Sulfide (mg/L)	1.2					N/A
Aluminum, Total (mg/L)	0.083					N/A
Boron, Total (mg/L)	0.032					N/A
Cobalt, Total (mg/L)	0.015					N/A
Iron, Total (mg/L)	0.136			190		NO
Magnesium, Total (mg/L)	2.34					N/A
Molybdenum, Total (mg/L)	1.18					N/A
Manganese, Total (mg/L)	0.020			*	*	N/A
Antimony, Total (mg/L)	0.136			*	*	N/A
Chromium, Total (mg/L)	0.001			63		NO
Copper, Total (mg/L)	0.025	*	*	*	*	N/A
Zinc, Total (mg/L)	0.058	*	*	*	*	N/A
Chloride (mg/L)	494	72,000	140,000	160,000		NO
Hardness (mg/L)	79.9					N/A
Nitrate (mg/L)	5.35			6300		NO
TDS (mg/L)	1120			310,000		NO
Antimony, dissolved (ug/L)	113			3500	400,000	NO
Arsenic, dissolved (ug/L)	8	28,000	94,000	6300		NO
Barium, dissolved (ug/L)	61			1,300,000		NO
Cadmium, dissolved (ug/L)	3	210	520	3100		NO
Chromium VI, dissolved (ug/L)	< 3	1300	6900			NO
Copper, dissolved (ug/L)	73.5	770	4000	810,000		NO
Iron, dissolved (ug/L)	87			190,000		NO
Manganese, dissolved (ug/L)	10			31,000		NO
Nickel, dissolved (ug/L)	4	11,000	9000	380,000	2,900,000	NO
Selenium, Total Recoverable (ug/L)	7	1700	3100	110,000	2,600,000	NO
Zinc, dissolved (ug/L)	51	7000	53,000	4,600,000	16,000,000	NO
<i>E. coli</i> (MPN/100mL)	190				126 N/100mL	YES

\* The standard for these metals is expressed in the dissolved form. Because dissolved data is available, the total recoverable data is not compared to the standard.

CBOD<sub>5</sub>, TSS, Ammonia and TRC: The cBOD<sub>5</sub> average limitation is a performance based limitation that was included in the permit prior to the establishment of the RCWQMP. The 69 kg/d limit has

therefore been maintained to avoid backsliding. In accordance with industrial permit writing convention, the maximum cBOD<sub>5</sub> limitation (152 kg/d) is twice the average loading assigned in the RCWQMP - ICI Americas, Inc.\* The maximum cBOD<sub>5</sub> loading is expressed in three significant figures in accordance with the RCWQMP average loading upon which it is based. The TSS limitations are also performance-based limitations. The calculations that established these limitations are based on 1985 data and are included in **Attachment F**. The ammonia loading limitations are based on the RCWQMP - ICI Americas, Inc.\* Ammonia concentrations submitted with the application, DMR data, and concentrations based on the load allocation were compared to the Water Quality Standards; the evaluation indicated no change in the loading allocations were required. For chlorinated effluents, GM 00-2011 recommends that a concentration of 20,000 µg/L be entered into STATS in order to force a limitation. A limitation of 1.6 mg/l was calculated for TRC; however, the existing limitation of 0.50 mg/l was retained to avoid backsliding. The 0.50 mg/L limitation was a performance-based limitation, negotiated in a previous permit issuance. The 0.50 mg/L TRC limitation was carried forward into the 2011 reissuance and it is carried forward into the 2016 reissuance. The origin of this limitation is memorialized in the document titled “Chlorine Calculations” which is included as part of **Attachment F**. See **Attachment F** for further information concerning the development of these limitations.

\* ICI Americas, Inc. is the entity assigned WLAs in the RCWQMP. In 1997, DuPont bought ICI's polyester films, resins, and intermediates businesses. In 1999, E.I. DuPont de Nemours and Teijin Limited merged in the joint venture of DuPont-Teijin. Because the facility has remained in operation, the WLAs assigned in the RCWQMP are applied to the new owners.

#### Nutrients:

Although the facility is a source of nutrients, it is not considered a significant discharger. Downstream of the fall line in the Chesapeake Bay watershed, a “significant discharger” is defined as “a sewage treatment works discharging with a design capacity of 0.1 million gallons per day or greater or an equivalent load discharged from industrial facilities” (9 VAC 25-820-10). “Equivalent Load” is defined in the same regulation as 5700 lbs/year of TN or 760 lbs per year of TP discharged by an industrial facility. Per 9 VAC 25-40-25, “point source dischargers” do not include stormwater or non-contact cooling water. Consequently, only Outfall 001 is subject to the nutrient regulations. Although Outfall 001 includes approximately 33,107 gpd of stormwater and cooling water, the entire flow at Outfall 001 was evaluated in order to be conservative. Annual loadings can be estimated based on average flows and concentrations. Four years of DMR data from March 2012 – March 2016 was used to estimate the annual TN and TP loadings. Based on the results in the table below, DuPont Teijin is not considered a significant discharger under the aforementioned regulations.

Table 4 – Nutrient Loading Estimates

Pollutant	Average Concentration (mg/L)	Average Flow (MGD)	Annual Loading (lbs/year)		Equivalent Load (lbs/year)
Total Nitrogen	10.6 mg/L	0.1359	4388	<	5700
Total Phosphorus	1.08 mg/L	0.1359	447	<	760

Non-significant discharges that are not expanding are not subject to the Nutrient Trading General Permit (9 VAC 25-820). Because the discharge of nutrients is not addressed by the GP, it is appropriate to maintain the existing TP concentration limitation in the individual permit to avoid backsliding and TN monitoring based on the permit writer's professional judgment. Since the maximum 30-day average flow of the facility has increased to 0.2016 MGD, the Total Phosphorus monthly average loading limitation has increased accordingly. In accordance with GM 07-2008 Amendment 2, physical or operational changes at industrial facilities would not be defined as upgrades if directed toward the quantity or quality of the materials produced or service rendered. Therefore, the increase in the max 30-day average flow at this facility and the conversion to TA-based polymer production do not constitute “expansion,” and this increase in the total phosphorus loading limitation is consistent with the nutrient regulations.



pH:

Special Condition C.15 in the permit establishes time periods that the pH can be outside the 6.0 to 9.0 range. This condition implements EPA guidance (40 CFR Part 401) for point sources that continuously monitor pH. **See Attachment F** for 40 CFR Part 401.

E. coli:

City of Richmond Bacterial TMDL was approved by the EPA on 11/4/2010 and by the SWCB on 6/29/2012. The TMDL initially assigned DuPont Teijin Films an *E. coli* WLA of 1.74E+12 cfu/year based on a design flow rate of 1.38 MGD. However, the facility subsequently reduced their flow to 0.009 MGD and the WLA was reduced to 1.57E+10 cfu/year through an interim “track-and-roll” modification. The available load was reallocated to future growth in the watershed. A limitation is assigned at Outfall 102 for 126 N/100mL of *E. coli* based on a monthly geometric mean resulting from at least 4 weekly samples to assure compliance with the TMDL. In addition, *E. coli* monitoring at Outfall 001 will be performed annually.

Dissolved Oxygen (DO):

The DO allocations found in the RCWQMP were included in this permit until the 2011 permit reissuance. The RCWQMP requires a monthly average minimum DO of 3.1 mg/L for the months of November through May and 5.8 mg/L for June through October. In 2011, the DO limitation from the RCWQMP was compared to the DO criteria set forth in 9 VAC 25-260-185 of the WQS (*Criteria to protect designated uses from the impacts of nutrients and suspended sediment in the Chesapeake Bay and its tidal tributaries*). In 2011, DEQ Staff determined that those DO criteria should be applied to this facility since they were more stringent than the WLAs found in the RCWQMP.

However, since the 2011 reissuance, DEQ concluded that DO criteria listed in 9 VAC 25-260-185 pertain to Chesapeake Bay segments as a whole and should not be applied to individual facilities. Those criteria would be attained post the bay-wide implementation of the Chesapeake Bay TMDL. Based on this information, the multiple DO limitations for different designated uses and temporal applications applied in the 2011 permit have been removed with this 2016 reissuance and replaced with the WLAs as set forth in the RCWQMP. These DO limitations were established to ensure protection of water quality.

Dissolved Sulfide and Hydrogen Sulfide:

Since the permit application indicated that total sulfides were in the effluent at a concentration of 1.2 mg/L, monitoring and reporting are required for these parameters. Through a conversion method, these data were initially used in an attempt to assess potential hydrogen sulfide (H<sub>2</sub>S) levels. However, the accuracy and precision of using total sulfide results for developing limits for H<sub>2</sub>S have recently come under question. According to Standard Methods, the unionized H<sub>2</sub>S “can be calculated from the concentration of dissolved sulfide, the sample pH, and the conditional ionization constant of H<sub>2</sub>S.” Based on the above, it now appears to be more appropriate to specify that results be reported as dissolved sulfide. To provide data to evaluate the potential presence of H<sub>2</sub>S and need for a limit, dissolved sulfide monitoring is required once per six months by grab sample for this permit reissuance. In addition, the un-ionized concentration of H<sub>2</sub>S shall be calculated and reported on the DMR. If the sample results of dissolved sulfide are below the quantification level (QL), then the concentration of un-ionized H<sub>2</sub>S should be reported as “<QL.”

GW Evaluation:

As part of the 2011 reissuance application, DuPont Teijin requested permission to treat rinse and purge water from their annual groundwater sampling activities (performed under RCRA Corrective Actions) at the onsite industrial wastewater treatment plant. Approximately 3,000 gallons of rinse and purge water is discharged to the facility once a year. The total volume is expected to be discharged to the plant in a single day, so the 3,000 gallons is treated as a per day discharge. Results from groundwater sampling activities were submitted for review. All observed concentrations were evaluated for reasonable potential assuming no treatment is achieved in their industrial wastewater treatment plant. A mass balance approach was not necessary in this case because the groundwater pollutant concentrations do not trigger limitations on their own. If a mass balance equation were performed to determine the mix concentration of the effluent plus the groundwater, the concentration could not be greater than the greater of the two input concentrations. Consequently, by evaluating the streams separately a more conservative analysis was performed during the 2011 reissuance process. The 2011 reissuance fact sheet contained a table that summarized the maximum concentrations in groundwater monitoring performed through 2010. For the 2016 reissuance, data from 2013 – 2015 was reviewed and compared to the maximum concentrations identified during the 2011 reissuance. It was reported that 2011 and 2012 annual groundwater monitoring was not performed. Since the 2011 reissuance, only a few parameters showed an increase in concentration compared with the data reviewed during the 2011 reissuance, and only two of the parameters (arsenic and chloroform) include a standard. The concentrations of both parameters were several orders of magnitude less than the WLA so there is no reasonable potential to violate in stream WQS. Consequently, permission to continue to treat the rinse and purge water is granted. The 2011 reissuance discussed an upcoming “Final Remedy” under the RCRA Corrective Action which was anticipated during the VPDES 2011 – 2016 permit term. A reopener clause was added to the 2011 permit in the event the “Final Remedy” was not consistent with authorization of the purge water discharge through the VPDES permit. As part of the 2016 reissuance process, DEQ inquired about the status of the “Final Remedy” and facility personnel were not aware of any RCRA decisions that prevents them from sending the purge water to the plant annually when groundwater monitoring is performed. At this point, it seems appropriate to leave the condition in the permit in the event that RCRA corrective action decisions impact the ability of the facility to direct their rinse and purge water to their industrial wastewater treatment plant in the future. **Attachment F** includes a table for the groundwater evaluation performed for the 2011 permit.

Table 5 - Outfall 001: Basis for Limits

PARAMETER	BASIS FOR LIMIT	DISCHARGE LIMITS			MONITORING REQUIREMENTS	
		MONTHLY AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NA	NL	NA	NL	Continuous	Recorded
002 pH	1	NA	6.0 s.u.	9.0 s.u.	Continuous	Recorded
004 TSS	2	100 kg/d	NA	170 kg/d	1 per Week	24 HC
005 TRC	2	NA	NA	0.50 mg/l	1 per Week	Grab
012 Total Phosphorus	2	2.0 mg/l	1500 g/d	NA	1 per Week	24 HC
013 Total Nitrogen	2	NL	NA	NL	1 per Week	24 HC
038 DO (Nov – May)	3	Monthly Average Minimum of 3.1 mg/l			1 per Day	Grab
317 DO (June – Oct)	3	Monthly Average Minimum of 5.8 mg/l			1 per Day	Grab
039 Ammonia-N	3	3600 g/d	NA	7300 g/d	1 per Week	24 HC
120 <i>E. coli</i>	5	NL	NA	NA	1 per Year	Grab
159 CBOD <sub>5</sub>	3	69 kg/d	NA	152 kg/d	1 per Week	24 HC
225 pH, Total Excursion Time	4	446 Minutes				
226 pH, Individual Excursion Time	4	60 Minutes				

1. Water Quality Standards
2. Professional Judgment
3. Richmond Crater Water Quality Management Plan
4. 40 CFR Part 401
5. City of Richmond Bacterial TMDL

#### Outfall 101

OCPSF Guidelines Part 414: Subpart D and Subpart I; SIC CODES 3081 and 2821

The BOD<sub>5</sub> and TSS limitations are based on Subpart D -- Thermoplastic Resins -- of the Organic Chemicals and Plastics and Synthetic Fibers (OCPSF) Federal effluent guidelines (See **Attachment J**). The limitations for the organic chemicals are from Subpart I -- Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment -- of the OCPSF guidelines. There are no metal bearing waste streams. The organic chemical limitations were calculated by multiplying the average 30-day maximum flow for this outfall by multipliers provided by the OCPSF Guidelines for each parameter. The average 30-day maximum flow for Outfall 101 as shown in **Attachment E** is 0.0404 MGD. The 2011 permit was calculated with loadings based on a flow of 0.0357 MGD; consequently, due to the increase in flow during the 2011 – 2016 permit term, the limitations proposed for this reissuance are less stringent. The limitations are expressed in the same number of significant figures as the multipliers, in accordance with the scientific rules of significant figures. While GM 06-2016 recommends loading limitations be expressed in whole numbers, it is the permit writer's professional judgment that expression in whole numbers is not advantageous in this case. This judgment is based on the following:

- 1) Loadings would need to be expressed in ug/d. The unit does not currently exist in the CEDS database.
- 2) All limitations would need to be individually footnoted to express the number of significant figures.
- 3) Expression of the loadings as a non-whole number allows clear expression of the number of significant figures and will minimize potential reporting errors.
- 4) The current expression in kg/d is consistent with the units used in the previous permit cycles and will provide for unit consistency in the DEQ database.

Table 6 - Outfall 101: Basis for Limits

PARAMETER	BASIS				PERMIT LIMIT		MONITORING REQUIREMENTS	
	EFFLUENT GUIDELINES							
	BPT Multiplier (µg/L)		BAT Multiplier (µg/L)		Monthly Average (kg/d)	Daily Maximum (kg/d)	FREQUENCY	SAMPLE TYPE
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum				
Flow (MGD)	0.0404	0.0404	0.0404	0.0404	NL	NL	1 per Week	Estimate
BOD <sub>5</sub> (mg/L)	24	64			3.7	9.8	1 per Week	24 HC
TSS (mg/L)	40	130			6.1	20	1 per Week	24 HC
Acenaphthene			22	59	0.0034	0.0090	1 per Year	Grab
Acrylonitrile			96	242	0.015	0.0370	1 per Year	Grab
Benzene			37	136	0.0057	0.0208	1 per Year	Grab
Carbon Tetrachloride			18	38	0.0028	0.0058	1 per Year	Grab
Chlorobenzene			15	28	0.0023	0.0043	1 per Year	Grab
1,2,4-Trichlorobenzene			68	140	0.010	0.0214	1 per Year	Grab
Hexachlorobenzene			15	28	0.0023	0.0043	1 per Year	Grab
1,2-Dichloroethane			68	211	0.010	0.0323	1 per Year	Grab
1,1,1-Trichloroethane			21	54	0.0032	0.0083	1 per Year	Grab
Hexachloroethane			21	54	0.0032	0.0083	1 per Year	Grab
1,1-Dichloroethane			22	59	0.0034	0.0090	1 per Year	Grab
1,1,2-Trichloroethane			21	54	0.0032	0.0083	1 per Year	Grab
Chloroethane			104	268	0.0159	0.0410	1 per Year	Grab
Chloroform			21	46	0.0032	0.0070	1 per Year	Grab
2-Chlorophenol			31	98	0.0047	0.015	1 per Year	Grab
1,2-Dichlorobenzene			77	163	0.012	0.0249	1 per Year	Grab
1,3-Dichlorobenzene			31	44	0.0047	0.0067	1 per Year	Grab
1,4-Dichlorobenzene			15	28	0.0023	0.0043	1 per Year	Grab
1,1-Dichloroethylene			16	25	0.0024	0.0038	1 per Year	Grab
1,2-trans-Dichloroethylene			21	54	0.0032	0.0083	1 per Year	Grab
2,4-Dichlorophenol			39	112	0.0060	0.0171	1 per Year	Grab
1,2-Dichloropropane			153	230	0.0234	0.0352	1 per Year	Grab
1,3-Dichloropropylene			29	44	0.0044	0.0067	1 per Year	Grab
2,4-Dimethyphenol			18	36	0.0028	0.0055	1 per Year	Grab
2,4-Dinitrotoluene			113	285	0.0173	0.0436	1 per Year	Grab
2,6-Dinitrotoluene			255	641	0.0390	0.0980	1 per Year	Grab
Ethylbenzene			32	108	0.0049	0.0165	1 per Year	Grab
Fluoranthene			25	68	0.0038	0.010	1 per Year	Grab
Methylene Chloride			40	89	0.0061	0.014	1 per Year	Grab
Methyl Chloride			86	190	0.013	0.0291	1 per Year	Grab
Hexachlorobutadiene			20	49	0.0031	0.0075	1 per Year	Grab
Napthalene			22	59	0.0034	0.0090	1 per Year	Grab

Table 6 Continued

PARAMETER	BASIS				PERMIT LIMIT		MONITORING REQUIREMENTS	
	EFFLUENT GUIDELINES							
	BPT Multiplier (µg/L)		BAT Multiplier (µg/L)		Monthly Average (kg/d)	Daily Maximum (kg/d)	FREQUENCY	SAMPLE TYPE
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum				
Nitrobenzene			27	68	0.0041	0.010	1 per Year	Grab
2-Nitrophenol			41	69	0.0063	0.011	1 per Year	Grab
4-Nitrophenol			72	124	0.011	0.0190	1 per Year	Grab
2,4-Dinitrophenol			71	123	0.011	0.0188	1 per Year	Grab
4,6-Dinitro-o-cresol			78	277	0.012	0.0424	1 per Year	Grab
Phenol			15	26	0.0023	0.0040	1 per Year	Grab
Bis(2-ethylhexyl)phthalate			103	279	0.0158	0.0427	1 per Year	Grab
Di-n-butyl phthalate			27	57	0.0041	0.0087	1 per Year	Grab
Diethyl phthalate			81	203	0.012	0.0310	1 per Year	Grab
Dimethyl phthalate			19	47	0.0029	0.0072	1 per Year	Grab
Benzo(a)anthracene			22	59	0.0034	0.0090	1 per Year	Grab
Benzo(a)pyrene			23	61	0.0035	0.0093	1 per Year	Grab
3,4-Benzofluoranthene			23	61	0.0035	0.0093	1 per Year	Grab
Benzo(k)fluoranthene			22	59	0.0034	0.0090	1 per Year	Grab
Chrysene			22	59	0.0034	0.0090	1 per Year	Grab
Acenaphthylene			22	59	0.0034	0.0090	1 per Year	Grab
Anthracene			22	59	0.0034	0.0090	1 per Year	Grab
Fluorene			22	59	0.0034	0.0090	1 per Year	Grab
Phenanthrene			22	59	0.0034	0.0090	1 per Year	Grab
Pyrene			25	67	0.0038	0.010	1 per Year	Grab
Tetrachloroethylene			22	56	0.0034	0.0086	1 per Year	Grab
Toluene			26	80	0.0040	0.012	1 per Year	Grab
Trichloroethylene			21	54	0.0032	0.0083	1 per Year	Grab
Vinyl Chloride			104	268	0.0159	0.0410	1 per Year	Grab

(BPT) Best Practicable Control Technology Available  
(BAT) Best Available Technology

Outfall 102

BOD<sub>5</sub> and TSS:

These limitations are based on 40 CFR 133.102 of the Federal Effluent Guidelines (FEGs) for Secondary Treatment Standards. Please note that the weekly (7-day) average limitations for BOD<sub>5</sub> and TSS recommended by the FEGs have been applied as maximum limitations in order to align with the permit limitations at other industrial internal outfalls which discharge to an Outfall 001.

E. coli Limitation:

A limitation for *E. coli* is expected to protect the primary contact recreation use bacteria criteria outlined in 9 VAC 25-260-170 of the WQS. The primary contact recreation bacterial criteria for protection of freshwater is 126N/100 mL colony forming units (CFU) of *E. coli* bacteria based on a monthly geometric mean resulting from at least 4 weekly samples. This limitation is consistent with the TMDL WLA discussed earlier in item 13 of this fact sheet.

Nutrient Monitoring Requirements:

In accordance with GM 14-2011, non-significant dischargers are subject to aggregate WLAs for TN, TP, and Sediments under the Total Maximum Daily Load (TMDL) for Chesapeake Bay. Monitoring of TN and TP is required in order to verify the aggregate WLAs.

Table 7 - Outfall 102: Basis for Limits

PARAMETER	BASIS FOR LIMIT	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVG	WEEKLY AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NA	NL	NA	NL	NA	Continuous	TIRE
003 BOD <sub>5</sub>	1	30 mg/l	NA	NA	45 mg/l	1 per Month	Grab
004 TSS	1	30 mg/l	NA	NA	45 mg/l	1 per Month	Grab
012 Total Phosphorus (mg/L)	4	NL	NA	NA	NL	1 per Year	Grab
013 Total Nitrogen (mg/L)	4	NL	NA	NA	NL	1 per Year	Calculated
068 Total Kjeldahl Nitrogen (mg/L)	4	NL	NA	NA	NL	1 per Year	Grab
120 E. coli	3	126 N/100 mL	NA	NA	NA	4 per Month	Grab
157 TRC* contact	2	NA	NA	NA	1.5 mg/L	1 per Day	Grab
213 TRC* contact	2	NA	NA	NA	0.60 mg/L	1 per Day	Grab
389 Nitrate + Nitrite (mg/L)	4	NL	NA	NA	NL	1 per Year	Grab

1. Federal Effluent Guidelines
2. GM14-2003
3. Water-Quality Based/TMDL
4. GM14-2011

\* 157 and 213 TRC samples are taken prior to dechlorination

## **Outfalls 901, 002, 003, and 004**

### **Outfall 002**

The drainage ditch (West Ditch) leading to Outfall 002 is an earthen ditch that receives stormwater via pipes that enter the ditch at different locations. The discharge point of the West Ditch is equipped with a spill control gate that can be closed to cut off the discharge in case of an emergency. Following the gate is a drop inlet and a barricade. Under normal flow conditions, the stormwater enters the drop inlet discharging through Outfall 901 (Outfall 001 during wet weather events). The barricade prevents a discharge from the stormwater outfall during most rain events. DuPont has estimated that it would require more than 3 inches of rain per hour to overflow the barricade at Outfall 002. Samples collected for the purpose of completing Form 2F were collected from the ditch during storm events just prior to the flow entering the drop inlet.

### **Outfall 003**

This is a concrete lined ditch (East Ditch) that runs through the plant. In addition to stormwater, the ditch receives cooling tower blowdown from cooling towers throughout the site, boiler blow down, weekly discharges during fire water pump checks, and HVAC condensate. The discharge point of the East Ditch is equipped with an electronic spill control gate that can be closed to cut off the discharge in case of an emergency. Following the gate is a drop inlet and a barricade. Under normal flow conditions, the stormwater enters the drop inlet discharging through Outfall 901 (Outfall 001 during wet weather events). The barricade prevents a discharge from the stormwater outfall during most rain events. DuPont has estimated that it would require more than 2.75 inches of rain per hour to overflow the barricade at Outfall 003. Samples collected for the purpose of completing Form 2F were collected from the ditch during storm events just prior to the flow entering the drop inlet.

### **Outfall 004**

This is a stormwater outfall and consists of an underground pipe system that collects stormwater from the Line 44 and 47 warehouses and the east and southeast corner of the plant, including roof drains and the railroad spur. This outfall drains directly to the river with no method to contain or divert the flow.

Form 2F sampling data for these outfalls were evaluated according to current agency guidance. See **Attachment E** for stormwater monitoring data for the 2011 – 2016 permit term.

Guidance Memo 96-001 recommends that chemical-specific water quality-based limits not be placed on stormwater outfalls at this time because the methodology for developing limits and the proper method of sampling is still a concern and under review/re-evaluation by EPA. Exceptions would be where a VPDES permit for a stormwater discharge has been issued that includes effluent limitations (backsliding must be considered before these limitations can be modified) and where there are reliable data, obtained using sound, scientifically defensible procedures, which provide the justification and defense for an effluent limitation. Therefore, in lieu of limitations, pollutants are assessed against screening criteria developed solely to identify those pollutants that should be given special emphasis during development and assessment of the Stormwater Pollution Prevention Plan (SWPPP).

In accordance with GM14-2003, each screening criterion is established as the most stringent of either: (1) two times the applicable pollutant's acute criterion, or where applicable, (2) the pollutant's benchmark monitoring concentration as contained in the VPDES Industrial Stormwater General Permit (ISWGP) (9 VAC 25-151-10 et seq.). All stormwater outfall effluent data submitted by the permittee that contained pollutants above the established screening criteria triggered the need for monitoring of that specific pollutant in Part I.A of the permit for that outfall. The screening criteria are then utilized in the permit as a comparative value. Based on the above, monitoring was established for the pollutants noted in Table 8 below. In addition, annual toxicity screening was required for these same outfalls.

The SWPPP required by Part I.E.3 of the permit is designed to reduce pollutants in stormwater runoff. Annual monitoring is required for pollutants identified above their respective benchmark monitoring concentration contained in the ISWGP. Quarterly monitoring and a Stormwater Management Evaluation including Whole Effluent Toxicity (WET) Testing is required by GM 14-2003 when pollutants exceed two times the acute water quality criteria. Pollutant specific monitoring results above the established comparative value or whole effluent toxicity testing which results in an LC<sub>50</sub> of less than 100% effluent will justify the need to reexamine the effectiveness of the SWPPP and any best management practices (BMPs) being utilized. The goal of the SWPPP is to reduce pollutants to the maximum extent practicable. An annual report is to be submitted to the DEQ Piedmont Regional Office and shall include the data collected the previous year with an indication if the SWPPP or any BMPs were modified based on the monitoring results.

In addition to comparing the observed value with applicable sector specific benchmarks, the Piedmont Regional Office compared all observed pollutant concentrations with the benchmarks established for all industrial sectors included in the ISWGP. This comparison was completed in 2011 and the same methodology was used during the 2016 reissuance. This comparison is designed to evaluate the effectiveness of a facility's BMPs. There are several parameters at each outfall that exceed the general benchmark concentration and trigger a BMP evaluation. Consequently, the exceeded benchmark parameters are included in Part I.E.4.b of the permit, which requires monitoring and reporting for the pollutants and corrective actions under Part I.E.2.i. if the benchmarks are exceeded. Corrective action includes revision of the SWPPP and/or modification or addition of BMPs.

Observed concentrations of antimony, manganese, and magnesium in stormwater discharges were evaluated against benchmarks currently in the ISWGP that did not exist during the 2011 reissuance. Exceedances of the magnesium benchmark were noted at each outfall on Form 2F of the reissuance application. Consequently, magnesium monitoring will be required in the 2016 reissuance. Aluminum was evaluated during the 2011 reissuance, but a benchmark concentration of 750 mg/L was used instead of the aluminum benchmark concentration of 750 ug/L. Exceedances of the aluminum benchmark concentration were noted on Form 2F of the application at Outfalls 901, 002, and 004, so benchmark monitoring will be required in the 2016 reissuance. In accordance with GM14-2003 and the ISWGP that became effective July 1, 2014, benchmark monitoring requirements have changed from annual to semiannual.

Annual benchmark monitoring for TN and TKN was required at Outfalls 901, 002, 003, and 004 during the 2011 - 2016 permit term. In accordance with GM14-2011 (*Nutrient Monitoring for Nonsignificant Discharges to the Chesapeake Bay Watershed*), Individual VPDES permits for industrial stormwater should contain permit requirements that are consistent with the ISWGP, which includes semiannual monitoring for the first two years of the permit. Monitoring for TP, TKN, Nitrate + Nitrite, TN, and TSS is required for the first two years at outfalls 901 and 004 with TN as the sum of TKN and Nitrite + Nitrate being derived from the results of those tests. Following the first two years of the permit term, only monitoring and reporting for TN and TKN will be required for the remainder of the permit term.



Table 8 - Stormwater Management Evaluation Screening

Parameter	2x Acute Standard (µg/l)	DEQ Benchmarks	Outfall	Maximum Concentration Reported
Total Aluminum	N/A	750 ug/L	901	3,120 ug/L
			002	1,030 ug/L
			003	211 ug/L
			004	2,480 ug/L
Total Antimony	N/A	0.64 mg/L	901	0.063 mg/L
			002	0.12 mg/L
			003	0.009 mg/L
			004	0.063 mg/L
BOD <sub>5</sub>	N/A	30 mg/L	901	16 mg/L
			002	85 mg/L
			003	19 mg/L
			004	5 mg/L
Total Cadmium	5.0	2.1 ug/L	901	<QL
			002	0.8 ug/L
			003	0.8 ug/L
			004	95 ug/L
Chromium	820	16 ug/L	901	4 ug/L
			002	3 ug/L
			003	4 ug/L
			004	4 ug/L
COD	NA	120 mg/L	901	81 mg/L
			002	24 mg/L
			003	46 mg/L
			004	23 mg/L
Total Copper	18	18 ug/L	901	313
			002	23
			003	53
			004	199
Total Iron	N/A	1.0 mg/L	901	4.06 mg/L
			002	16.5 mg/L
			003	0.527 mg/L
			004	5.65 mg/L
TKN	N/A	1.5 mg/L	901	2.78 mg/L
			002	6.58 mg/L
			003	4.95 mg/L
			004	4.1 mg/L
Total Lead	140	120 ug/L	901	9 ug/L
			002	7 ug/L
			003	8 ug/L
			004	9 ug/L

Table 8 - Continued

Parameter	2x Acute Standard (µg/l)	DEQ Benchmarks	Outfall	Maximum Concentration Reported
Total Nitrogen	N/A	<b>2.2 mg/L</b>	901	<b>8.4 mg/L</b>
			002	<b>7.5 mg/L</b>
			003	<b>6.4 mg/L</b>
			004	<b>5.2 mg/L</b>
Total Manganese	N/A	1.0 mg/L	901	0.146 mg/L
			002	0.033 mg/L
			003	0.034 mg/L
			004	0.039 mg/L
Total Magnesium	N/A	<b>0.064 mg/L</b>	901	<b>8.34 mg/L</b>
			002	<b>0.586 mg/L</b>
			003	<b>12.3 mg/L</b>
			004	<b>1.64 mg/L</b>
Total Nickel	260	470 ug/L	901	5 ug/L
			002	5 ug/L
			003	5 ug/L
			004	5 ug/L
Total Phosphorus	N/A	2 mg/L	901	0.68 mg/L
			002	0.17 mg/L
			003	0.41 mg/L
			004	0.36 mg/L
TSS	N/A	100 mg/L	901	59 mg/L
			002	34 mg/L
			003	8.3 mg/L
			004	7.2 mg/L
Total Selenium	40	<b>5 ug/L</b>	901	<QL
			002	<QL
			003	<b>8 ug/L</b>
			004	<QL
Total Zinc	<b>170</b>	<b>120 ug/L</b>	901	<b>446 ug/L</b>
			002	<b>2,390 ug/L</b>
			003	<b>747 ug/L</b>
			004	<b>1,730 ug/L</b>
pH	N/A	<b>6.0 – 9.0 S.U.</b>	901	8.92 S.U.
			002	6.21 S.U.
			003	<b>9.78 S.U.</b>
			004	7.76 S.U.

A stream hardness of 67 mg/l CaCO<sub>3</sub> was used to calculate standards. All other data input in MSTRANTI is representative of the stream; however, hardness is the only variable that affects the calculation of metals standards.

The Zinc benchmark value is in **Bolded Italics** because it is the single applicable benchmark value to the industrial activity that occurs at the facility.

The highlighted cells in the table represent the parameters and outfalls for which the observed values exceeded either the screening criteria or the benchmarks. The screening criteria and benchmarks are highlighted if they were exceeded. Maximum reported concentrations that exceed either the screening criteria or benchmarks are bolded

A Stormwater Management Evaluation will be required for the following parameters due to stormwater data exceeding two times the acute WQS:

Outfall 901: Copper and Zinc  
Outfall 004: Copper, Zinc, and Cadmium

An evaluation of the copper and zinc data at outfalls 002 and 003 during the 2011 reissuance indicated that concentrations in excess of two times the acute water quality concentration occurred at those outfalls. However, the 2011 permit only required a stormwater management evaluation for Outfalls 901 and 004. Since outfall 002 and 003 samples are generally collected in their respective drainage channels, which generally discharge via 901 (001 during wet weather), it is appropriate to continue with the methodology established previously and require the stormwater management evaluation at Outfall 901 and 004.

Selenium was detected above the benchmark concentration of 5 ug/L, which is more stringent than two times the acute concentration of 40 ug/L, which could require stormwater management evaluation requirements in the permit. However, since the concentration above the benchmark was only observed in the grab sample collected with the application and not the flow-weighted composite sample, the permit writer's professional judgment is being used to require semiannual benchmark monitoring requirements versus the stormwater management evaluation requirements for selenium at Outfall 003.

Benchmark Monitoring and a BMP evaluation will be required for the following parameters due to stormwater data exceeding DEQ benchmark values:

Outfall 901: Aluminum, Iron, Copper, Magnesium, TN, TKN, and Zinc  
Outfall 002: Aluminum, BOD<sub>5</sub>, Copper, Iron, Magnesium, TN, TKN, and Zinc  
Outfall 003: pH, Copper, Selenium, Magnesium, TN, TKN, and Zinc  
Outfall 004: Aluminum, Cadmium, Copper, Magnesium, TN, TKN, and Zinc

The Part I.A monitoring requirements for Outfalls 901, 002, 003, and 004 are described in Tables 9 through 12 below.

Table 9 - Outfall 901 Monitoring					
PARAMETER	DISCHARGE LIMITS			MONITORING REQUIREMENTS	
	AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NL	NA	NL	1 per 3 Months	Estimate
004 Total Suspended Solids (TSS)	NL	NA	NL	1 per 6 Months for first two years	Grab
012 Total Phosphorus	NL	NA	NL	1 per 6 Months for first two years	Grab
013 Total Nitrogen	NL	NA	NL	1 per 6 Months	Calculated
068 Total Kjeldahl Nitrogen (TKN)	NL	NA	NL	1 per 6 Months	Grab
361 Iron, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
389 Nitrite + Nitrate	NL	NA	NL	1 per 6 Months for first two years	Grab
410 Aluminum, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
442 Copper, Total Recoverable	NL	NA	NL	1 per 3 Months	Grab
448 Zinc, Total Recoverable	NL	NA	NL	1 per 3 Months	Grab
922 Magnesium, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab

Table 10 - Outfall 002 Monitoring					
PARAMETER	DISCHARGE LIMITS			MONITORING REQUIREMENTS	
	AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NL	NA	NL	1 per 6 Months	Estimate
003 BOD <sub>5</sub>	NL	NA	NL	1 per 6 Months	Grab
013 Total Nitrogen	NL	NA	NL	1 per 6 Months	Calculated
068 Total Kjeldahl Nitrogen (TKN)	NL	NA	NL	1 per 6 Months	Grab
361 Iron, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
410 Aluminum, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
442 Copper, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
448 Zinc, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
922 Magnesium, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab

Table 11 - Outfall 003 Monitoring					
PARAMETER	DISCHARGE LIMITS			MONITORING REQUIREMENTS	
	AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NL	NA	NL	1 per 6 Months	Estimate
002 pH	NA	NL	NL	1 per 6 Months	Grab
013 Total Nitrogen	NL	NA	NL	1 per 6 Months	Calculated
068 Total Kjeldahl Nitrogen (TKN)	NL	NA	NL	1 per 6 Months	Grab
408 Selenium, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
442 Copper, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
448 Zinc, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
922 Magnesium, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab

Table 12 - Outfall 004 Monitoring					
PARAMETER	DISCHARGE LIMITS			MONITORING REQUIREMENTS	
	AVG	MIN	MAX	SAMPLING FREQUENCY	SAMPLE TYPE
001 Flow	NL	NA	NL	1 per 3 Months	Estimate
004 Total Suspended Solids (TSS)	NL	NA	NL	1 per 6 Months for first two years	Grab
012 Total Phosphorus	NL	NA	NL	1 per 6 Months for first two years	Grab
013 Total Nitrogen	NL	NA	NL	1 per 6 Months	Calculated
068 Total Kjeldahl Nitrogen (TKN)	NL	NA	NL	1 per 6 Months	Grab
361 Iron, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
389 Nitrite + Nitrate	NL	NA	NL	1 per 6 Months for first two years	Grab
410 Aluminum, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab
440 Cadmium, Total Recoverable	NL	NA	NL	1 per 3 Months	Grab
442 Copper, Total Recoverable	NL	NA	NL	1 per 3 Months	Grab
448 Zinc, Total Recoverable	NL	NA	NL	1 per 3 Months	Grab
922 Magnesium, Total Recoverable	NL	NA	NL	1 per 6 Months	Grab

Part I.E. WET Testing:

WET Testing is required by GM14-2003 when pollutants exceed two times the acute water quality criteria. Table 13 below includes results of the toxicity testing performed at Outfalls 901 and 004 between 2012 – 2015. Results indicate a reasonable potential for toxicity from stormwater discharge may occur. WET Testing requirements at Outfalls 901 and 004 will be carried forward from the 2011 reissuance to the 2016 reissuance.

As noted in the fact sheet for the 2011 reissuance Outfalls 002 and 003 are only expected to discharge during extremely large rainfall events, so staff does not propose whole effluent toxicity testing at these outfalls. Outfalls 002 and 003 generally discharge via Outfall 901; Outfalls 002 and 003 only discharge during high flow conditions equivalent (excluding comingled blow-down process wastewater, weekly discharges during fire water pump checks, or other stormwater contributing base flows) to 3 inches of rain per hour at 002 and 2.75 inches per hour at 003. Consequently, WET testing at outfalls 002 and 003 will not be required due to the diversion of the first flush runoff flows to Outfall 901 via the drop inlets, and ultimate significant dilution with James River flows. If subsequent reported data shows a potential need for that decision to be re-evaluated, DEQ may do so under the WQ Criteria Reopener special condition (Part I.C.10).

Table 13 - Outfall 901 and 004 Toxicity Data

TEST DATE	Outfall	Organism	LC <sub>50</sub>	% SURVIVAL IN 100% EFFLUENT	TEST LAB
November 2012	901	<i>Ceriodaphnia dubia</i>	6.25	0	Coastal Bioanalysts, Inc.
		<i>Pimephales promelas</i>	>100	100	
December 2013		<i>Ceriodaphnia dubia</i>	>100	100	
		<i>Pimephales promelas</i>	>100	100	
September 2014		<i>Ceriodaphnia dubia</i>	>100	100	
		<i>Pimephales promelas</i>	>100	100	
October 2015		<i>Ceriodaphnia dubia</i>	36.5	0	
		<i>Pimephales promelas</i>	100	100	
November 2012	004	<i>Ceriodaphnia dubia</i>	>100	100	
		<i>Pimephales promelas</i>	>100	100	
December 2013		<i>Ceriodaphnia dubia</i>	>100	70	
		<i>Pimephales promelas</i>	71.2	20	
September 2014		<i>Ceriodaphnia dubia</i>	43.8	0	
		<i>Pimephales promelas</i>	30.2	30	
October 2015		<i>Ceriodaphnia dubia</i>	63.2	0	
		<i>Pimephales promelas</i>	50.3	0	

17. Antibacksliding Statement:

The backsliding proposals with this reissuance conform to the antibacksliding provisions of Section 402(o) of the Clean Water Act, 9 VAC 25-31-220.L., and 40 § CFR 122.44.

As discussed in Section 16 of this Fact Sheet, during the 2011 reissuance of this permit, DEQ staff incorrectly interpreted the criteria for DO found at 9 VAC 25-260-185; thus, applying multiple DO limitations for different designated uses and temporal applications. The aforementioned criteria were not intended to be applied to individual facilities but rather to whole segments of the Chesapeake Bay. DEQ Staff has proposed reinstating those WLAs as assigned to this facility located within the RCWQMP. These limitations were established to protect water quality and since the 2011 limitations were incorrectly interpreted, backsliding is not an issue.

All limits are at least as stringent as in the previous permit. The Total Phosphorus loading limitation for Outfall 001 was adjusted to reflect the increase in the maximum 30-day average flow for the facility. This loading is still consistent with the originally assigned concentration limitation. Because the loading limitation is based on the concentration and flow, adjustment of the loading limitation in accordance with changes in flow does not constitute backsliding.

The permit expresses the load limitations at Outfall 101 as required by the applicable federal effluent guideline (see **Attachment J**). Load limitations have increased, but only as a factor of increased flow while concentrations limits remain unchanged. Because effluent guidelines are technology-based limitations, backsliding is not an issue.

18. Special Conditions:

**B.1. Additional Chlorine Limitations and Monitoring Requirements (Outfall 102)**

**Rationale:** Required by Sewerage Collection and Treatment Regulations 9 VAC 25-790 and Water Quality Standards 9 VAC 25-260-170, Bacteria; Other Recreational Waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

**C.1. Notification Levels**

**Rationale:** Required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

**C.2. O&M Manual Requirement**

**Rationale:** Required by Code of Virginia § 62.1-44.16; VPDES Permit Regulation, 9 VAC 25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this.

**C.3. Licensed Operator Requirement**

**Rationale:** The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals regulations (18 VAC 160-20-10 et seq.), require licensure of operators. 9 VAC 25-790-300 recommends licensure class levels based on treatment works size and processes.

**C.4. 95% Capacity Reopener (Outfall 102)**

**Rationale:** Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for all POTW and PVOTW permits.

**C.5. CTC & CTO Requirement (Outfall 102)**

**Rationale:** Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulation, 9 VAC 25-790.

**C.6. Reliability Class (Outfall 102)**

**Rationale:** Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790-70 for all permits issued to treatment works treating domestic sewage.

**C.7. Materials Handling/Storage**

**Rationale:** 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia § 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

**C.8. Total Maximum Daily Load (TMDL)/Nutrient Reopener**

**Rationale:** 9 VAC 25-49-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction expansion or upgrade. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

**C.9. Water Quality Criteria Reopener**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-220 D requires effluent limitations to be established which will contribute to the attainment or maintenance of the water quality standards.

**C.10. Compliance Reporting**

**Rationale:** Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limitation or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

**C.11. Sludge Use and Disposal (Outfall 102)**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal.

**C.12. Sludge Reopener (Outfall 102)**

**Rationale:** Required by VPDES Permit Regulation, 9 VAC 25-31-220 C 4 for all permits issued to treatment works treating domestic sewage.

**C.13. Total Maximum Daily Load (TMDL) Reopener**

**Rationale:** Section 303(d) of the Clean Water Act requires that TMDLs be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

**C.14. Closure Plan**

**Rationale:** This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

**C.15. pH Excursions**

**Rationale:** 40 CFR Part 401. This condition establishes time limits that pH values may be outside the range stated in Part I.A. of the permit. A total time limit for any calendar month and a time limit for an individual excursion are established. This special condition implements EPA guidance for point sources that continuously monitor pH.



#### **C.16. Chilled Water Discharge**

**Rationale:** This condition authorizes discharges less than or equal to 5000 gallons per day of chilled water at outfall 001. This condition was initially added to the permit several cycles ago to address unusual discharges of chilled water. The unusual discharges were presumably associated with HVAC units that dated back to the 70s. It established a 5000 gpd threshold to minimize reporting under Part II.H of the permit for situations that are not expected to have an adverse impact. Since the establishment of the permit condition, 7 of the 9 old units have been replaced and replacement of the last two was expected during the 2011 – 2016 permit term. Although the new units are less prone to leakage than old units, the potential for leaks from these systems still exists. Minor operational leaks occur on a regular basis and are accounted for in the application Form 2C. This condition establishes a volume that qualifies as unusual/extraordinary in order to avoid unnecessary reporting throughout the permit cycle. An accidental discharge is simply any discharge that is not purposeful (i.e. coil leaks versus maintenance draining).

#### **C.17. CER**

**Rationale:** §62.1-44.16 of the Code of Virginia requires industrial facilities to obtain DEQ approval for proposed discharges of industrial wastewater. A CER means a document setting forth preliminary concepts or basic information for the design of industrial wastewater treatment facilities and the supporting calculations for sizing the treatment operations.

#### **C.18. Groundwater Sampling Purge Water**

**Rationale:** See Part 16 of the Fact Sheet for discussion of authorization of groundwater sampling purge water. A reopener clause is included to address any changes that may occur under RCRA Corrective Action.

#### **D. Whole Effluent Toxicity Testing**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. See **Attachment G**.

#### **E. Stormwater Management Conditions**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-10 defines discharges of stormwater from industrial activity in 9 industrial categories. 9 VAC 25-31-120 requires a permit for these discharges. The Stormwater Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of stormwater associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law. Based on the SIC codes, sector specific requirements from Sector C and Y apply to the stormwater discharged from the site.

#### **Part II, Conditions Applicable to All Permits**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

19. NPDES Permit Rating Work Sheet: Total Score: 103 (See **Attachment H**)

20. Changes to the permit:

Change to Permit Cover Page:

The permit expiration date changed to August 31, 2021, which is shy of a five year term that would have expired on September 14, 2021. This change is in accordance with current Piedmont Regional Office protocols for VPDES permit terms in order to establish a permit term that will begin on the first day of the month moving forward.

The River Basin changed from James River (Lower) to James River.

Table 14 - Effluent Monitoring Changes for Outfalls 001

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
DO (Nov-May)	6.0 mg/L Weekly Average; 5.0 mg/L Instantaneous	3.1 mg/L Monthly Average Minimum	No changes		As discussed in Section 16 of this Fact Sheet, during the 2011 reissuance of this permit, DEQ staff incorrectly interpreted the criteria for DO found at 9 VAC 25-260-185; thus, applying multiple DO limitations for different designated uses and temporal applications. The aforementioned criteria were not intended to be applied to individual facilities but rather to whole segments of the Chesapeake Bay. DEQ Staff has proposed reinstating those WLAs as assigned to this facility located within the RCWQMP. These limitations were established to protect water quality.
DO (June-Oct)	5.8 mg/L Monthly Average 4.3 mg/L Instantaneous	5.8 mg/L Monthly Average Minimum	No changes		
Dissolved Sulfide	--	NL	--	1 per 6 Months	GM14-2003 requires dissolved sulfide and hydrogen sulfide monitoring and reporting as a result of the total sulfide concentration reported on the permit application.
Hydrogen Sulfide	--	NL	--	1 per 6 Months	
TP Loading	1400 g/d	1500 g/d	No changes		In accordance with the increase in the maximum 30-day average flow.
In addition to the changes noted above, Fire Suppression Makeup Water discharges are now authorized to be discharged via Outfall 001. Each week, the facility tests the pumps associated with their fire suppression system to ensure they are working properly. The additional flows are accounted for on Form 2C of the application.					

Table 15 - Effluent Monitoring Changes for Outfall 101

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
FEG limitations	Loading limitations based on 0.0357 MGD	Loading limitations based on 0.0404 MGD	No Change		FEG loading limitations at Outfall 101 were updated to reflect current flows at the facility. Since the flow at Outfall 101 has increased all of the loading limitations have increased.

Table 16 - Effluent Monitoring Changes for Outfall 102

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
Total Phosphorus	--	NL	--	1 per Year	This monitoring is included in accordance with GM14-2011, which addresses Nutrient Monitoring for “Non-significant” Discharges to the Chesapeake Bay Watershed. Non-significant dischargers are subject to the aggregate WLAs for Total Nitrogen (TN) and Total Phosphorus (TP) and Sediments under the Total Maximum Daily Load (TMDL) for Chesapeake Bay. Monitoring of TN and TP is required in order to verify the aggregate loads. TN is the sum of TKN and Nitrate + Nitrite. Concurrent sampling of TKN and Nitrate + Nitrite should be used in calculating TN.
Total Kjeldahl Nitrogen (TKN)	--	NL	--	1 per Year	
Nitrate + Nitrite	--	NL	--	1 per Year	
Total Nitrogen	--	NL	--	1 per Year	

Table 17 - Effluent Monitoring Changes for Outfall 901

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
BOD <sub>5</sub>	NL	--	1 per Year	--	Monitoring requirements removed in accordance with the DEQ Stormwater Benchmark Evaluation. Detected concentrations were below the applicable benchmark during the 2011 – 2016 permit term.
COD	NL	--	1 per Year	--	
Total Recoverable Aluminum	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Magnesium	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Suspended Solids (TSS)	--	NL	--	1 per 6 Months	In accordance with GM 14-2011 ( <i>Nutrient Monitoring for Nonsignificant Discharges to the Chesapeake Bay Watershed</i> ), Individual VPDES permits for industrial stormwater should contain permit requirements that are consistent with the ISWGP, which includes semiannual monitoring for the first two years of the permit.
Total Phosphorus	--	NL	--	1 per 6 Months	
Nitrate + Nitrite	--	NL	--	1 per 6 Months	
Total Kjeldahl Nitrogen (TKN)	NL	NL	1 per Year	1 per 6 Months	In accordance with GM14-2003 and the ISWGP that became effective July 1, 2014, benchmark monitoring requirements have changed from annual to seminannual.
Total Nitrogen	NL	NL	1 per Year	1 per 6 Months	
Total Recoverable Iron	NL	NL	1 per Year	1 per 6 Months	

Table 18 - Effluent Monitoring Changes for Outfall 002

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
BOD <sub>5</sub>	--	NL	--	1 per Year	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Aluminum	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Magnesium	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
All existing parameters	NL	NL	1 per Year	1 per 6 Months	In accordance with GM14-2003 and the ISWGP that became effective July 1, 2014, benchmark monitoring requirements have changed from annual to semiannual.

Table 19 - Effluent Monitoring Changes for Outfall 003

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
BOD <sub>5</sub>	NL	--	1 per Year	--	Monitoring requirements removed in accordance with the DEQ Stormwater Benchmark Evaluation. Detected concentrations were below the applicable benchmark during the 2011 – 2016 permit term.
COD	NL	--	1 per Year	--	
pH	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Selenium	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Magnesium	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
All existing parameters	NL	NL	1 per Year	1 per 6 Months	In accordance with GM14-2003 and the ISWGP that became effective July 1, 2014, benchmark monitoring requirements have changed from annual to semiannual.

Table 20 - Effluent Monitoring Changes for Outfalls 004

Parameter	Limitations		Monitoring Requirements		Rationale
	From	To	From	To	
Total Suspended Solids (TSS)	--	NL	--	1 per 6 Months	In accordance with GM 14-2011 ( <i>Nutrient Monitoring for Nonsignificant Discharges to the Chesapeake Bay Watershed</i> ), Individual VPDES permits for industrial stormwater should contain permit requirements that are consistent with the ISWGP, which includes semiannual monitoring for the first two years of the permit.
Total Phosphorus	--	NL	--	1 per 6 Months	
Nitrate + Nitrite	--	NL	--	1 per 6 Months	
Total Recoverable Aluminum	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Recoverable Magnesium	--	NL	--	1 per 6 Months	Added in accordance with the DEQ Stormwater Benchmark Evaluation.
Total Kjeldahl Nitrogen (TKN)	NL	NL	1 per Year	1 per 6 Months	In accordance with GM14-2003 and the ISWGP that became effective July 1, 2014, benchmark monitoring requirements have changed from annual to semiannual.
Total Nitrogen	NL	NL	1 per Year	1 per 6 Months	
Total Recoverable Iron	NL	NL	1 per Year	1 per 6 Months	

Table 21 - Changes to Part I.A Footnotes and Special Conditions

Special Condition		Change
From	To	
--	Part I.A.1.a [6]	Added footnote describing hydrogen sulfide calculation and reporting.
--	Part I.A.1	Defined 1 per 6 Months and 1 per Year monitoring frequencies.
Part I.A.2	Part I.A.2	Added date when DMRs for 1 per 3 Months monitoring are due and defined 1 per 6 Months monitoring frequency.
Part I.A.2.a [1]	Part I.A.2.a [1]	Changed the existing footnote describing total nitrogen to the following: Total nitrogen, which is the sum of TKN and nitrate + nitrite, shall be derived from the results of those tests.
--	Part I.A.2.a [2]	Added footnote to TSS, total phosphorus, and nitrite + nitrate explaining that monitoring is required for the first two years of the permit term.
--	Part I.A.3	Defined 1 per Year monitoring frequency.

Special Condition		Change
From	To	
--	Part I.A.4.a [3]	Added the following footnote: Total nitrogen, which is the sum of TKN and nitrate + nitrite, shall be derived from the results of those tests.
--	Part I.A.5	Defined 1 per 6 Months monitoring frequency.
--	Part I.A.6	Defined 1 per 6 Months monitoring frequency.
Part I.A.7	Part I.A.7	Added date when DMRs for 1 per 3 Months monitoring are due and defined 1 per 6 Months monitoring frequency.
Part I.A.7	Part I.A.7	Changed the existing footnote describing Total nitrogen to the following: Total nitrogen, which is the sum of TKN and nitrate + nitrite, shall be derived from the results of those tests.
--	Part I.A.7.a [2]	Added footnote to TSS, Total Phosphorus, and Nitrite + Nitrate explaining that monitoring is required for the first two years of the permit term.
Part I.B.2	Part I.B.2	Additional Limitations and Monitoring Requirements - Revised in accordance with GM14-2003.
Part I.C.2	Part I.C.2	Operation and Maintenance Manual Requirement - Revised in accordance with GM14-2003.
Part I.C.3	Part I.C.3	Licensed Operator Requirement - Revised in accordance with GM14-2003.
Part I.C.5	Part I.C.5	CTC & CTO Requirement - Revised in accordance with GM14-2003.
Part I.C.10	Part I.C.10	Compliance Reporting - Revised in accordance with GM14-2003. Added nutrient monitoring/QL language per GM14-2011. Added quantification level for dissolved sulfide.
Part I.C.18	--	Water Quality Criteria Monitoring – Removed this special condition since this condition was included in the 2011 permit due to the facility converting to a TA-based polymer process. Monitoring was completed and a reasonable potential did not exist for the observed pollutant concentrations, so this condition is no longer needed.
Part I.C.19	--	Compliance Schedule for Dissolved Oxygen – Removed this special condition since the compliance schedule has expired, and therefore, this condition is no longer needed.
Part I.C.20	Part I.C.18	Ground Water Sampling Purge – Changed title to Ground Water Sampling Purge Water and removed reference to “Final Remedy”. Renumbered due to removal of special conditions in Parts I.C.18 and I.C.19.
Part I.D	Part I.D	Changed title of section from Toxics Management Program to Whole Effluent Toxicity Testing
Part I.D.1.a	Part I.D.1.a	Language revised based on WET Testing Memo (See <b>Attachment G</b> ). Removed reference to DMR reporting since the 2016 reissuance will not require toxicity reporting on a DMR.
Part I.D.2	Part I.D.2	Removed reference to DMR reporting since the 2016 reissuance will not require toxicity reporting on a DMR.
Part I.E.1 through E.3	Part I.E.1 through E.3	Stormwater Management Conditions – Changed stormwater to one word throughout the permit and revised boilerplate language in accordance with GM14-2003.
Part I.E.4	Part I.E.4	Sector Specific Permit Requirements – Revised boilerplate language in accordance with GM14-2003. Revised the benchmark monitoring requirement tables based on changes to the monitoring requirements of Part I.A.
--	Part I.E.5	Added in accordance with the ISWGP, 9 VAC 25-151-10 et seq.

Special Condition		Change
From	To	
--	Part I.E.6	Added in accordance with the ISWGP, 9 VAC 25-151-10 et seq.
--	Part I.E.7	Added in accordance with the ISWGP, 9 VAC 25-151-10 et seq.

Table 22 - Permit Processing Change Sheet: Part II - Conditions Applicable to All Permits

From	To	Condition Changed	Reason for Change
II.A	II.A	Monitoring	Updated language per GM14-2003
II.B.2	II.B.2	Records	Updated language per GM14-2003
II.C.3	--	Reporting Monitoring Results (#3)	Part II.C.3 language removed per GM14-2003
II.C.4	II.C.3	Reporting Monitoring Results (#4)	Part II.C.4 becomes Part II.C.3 (numerically) due to removal of previous Part II.C.3
II.I.3	II.I.3	Reports of Noncompliance	Revised to reflect new Piedmont Regional Office reporting protocol adopted January 8, 2014

21. Variances/Alternate Limits or Conditions: None.

22. Public Notice Information required by 9 VAC 25-31-280 B:

Comment period: Start Date: August 10, 2016 End Date: September 9, 2016  
Published Dates: August 10, 2016 and August 17, 2016  
Newspaper: *Style Weekly*

All pertinent information is on file and may be inspected or copied by contacting Shawn Weimer at:

Virginia Department of Environmental Quality (DEQ)  
Piedmont Regional Office  
4949-A Cox Road  
Glen Allen, Virginia 23060-6296

Telephone Number (804) 527-5055  
Email: [Shawn.Weimer@deq.virginia.gov](mailto:Shawn.Weimer@deq.virginia.gov)

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.



23. Additional Comments:

- a. Previous Board Action: DEQ sent the facility a notice of violation (NOV) dated May 19, 2016. As of July 14, 2016, a consent order is being drafting to address the NOV.
- b. Staff comments:
  - (1) Planning Conformance Statement: The discharge is in conformance with the existing planning documents for the area.
  - (2) Controversial Permit Assessment: This permit is not expected to be controversial.
  - (3) Fees: Permit maintenance fees are up to date, last paid on October 1, 2015.
  - (4) e-DMR Participation: The permittee registered for eDMR participation on 6/28/2011 and is currently using e-DMR.
  - (5) Virginia Environmental Excellence Program (VEEP) Participation: The facility is not enrolled in the VEEP program.
  - (6) Effluent Monitoring Reductions and Waivers: The removal of COD and BOD monitoring at outfalls 901 and 003 were based on a review of stormwater monitoring data collected during the 2011 – 2016 permit term that demonstrated that results were below the applicable benchmarks. Additional reduced monitoring was not considered during this permit reissuance as a result of the recent NOV that the facility received.
  - (7) General Permit Registration:  
The facility is not required to register for coverage under 9 VAC 25-820-10 *et seq.* General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed.
  - (8) Financial Assurance: Financial assurance does not apply to this facility because it is an industrial facility.
- c. Other Agency Comments
  - (1) EPA comments: TBD (Draft permit documents were sent to EPA)
  - (2) VDH comments: The application was sent to VDH-ODW. In a response dated May 12, 2016 (See **Attachment I**), VDH commented that the raw water intake for the Virginia American – Hopewell waterworks is located 10.8 miles downstream from the primary discharge point through the main river channel and 5.7 miles downstream from the primary discharge point through Turkey Island Cutoff. VDH did not request review of the draft permit.
  - (3) DCR comments: Coordination with DCR's Division of Natural Heritage was requested for the 2016 reissuance. In a letter dated June 2, 2016, DCR provided their comments on the reissuance, indicating that Atlantic Sturgeon are documented within the vicinity of the discharge. DCR included a recommendation that ultraviolet or ozone disinfection be used instead of chlorine disinfection at Outfall 102. DEQ responded to the recommendation in an email to DCR dated July 14, 2016. As a result of DCR's recommendation and concern regarding chlorine, DEQ strongly encourages the facility to consider the use of ultraviolet disinfection in the future. Correspondence between DEQ and DCR is included in **Attachment I**.
  - (4) DGIF comments: Coordination with DGIF was requested, but no comments from DGIF were received by DEQ. Information generated via DGIF's website and correspondence between DEQ and DGIF are located in **Attachment I**.
  - (5) US Fish and Wildlife Service: Coordination with the US Fish and Wildlife Service (USFWS) was requested for the 2016 reissuance. In an email dated June 3, 2016, the USFWS indicated the following: "Based on the project description and location, it appears

that no impacts to federally listed species or designated critical habitat will occur, and we have no further comment.” Correspondence between DEQ and USFWS is included in **Attachment I**.

- (6) DEQ comments: As noted in the 2011 reissuance fact sheet, in 1990 on its own initiative, this facility installed groundwater monitoring wells in order to conduct a groundwater contamination investigation in the vicinity of the hot well and tank farm. Groundwater monitoring indicated groundwater impacts from process chemicals in the tank farm area, pack room area, and in the production wells which prompted the facility to notify DEQ. Since its initial investigation, the facility has taken steps to eliminate potential sources of groundwater pollution including: replacing a cracked concrete sump; maintaining buried conduits, and catch basins, and the concrete containment system for the above-ground tanks in the tank farm; and installing containment walls around the hot well to contain any overflows. Also, note that the above-ground tanks are elevated in order to facilitate the discovery of any leaks. Over the last fifteen years of the monitoring program, contaminant concentrations were significantly reduced or were reported as non-detectable. Since the initial contamination sources were eliminated and monitoring showed no increase in contaminant levels for several years, DEQ staff discontinued the monitoring program in the 2006 permit reissuance.
- d. Owner Comments: Owner comments are located in **Attachment K**.
- e. Public Notice comments: **TBD**
- f. Local Government Notification of Public Notice: Local government officials were notified of the public comment period on August 3, 2016. In accordance with the Code of Virginia §62.1-44.15:01, the following individuals received the notification:

James Stegmaier, Chesterfield County Administrator  
Janice Blakley, Clerk to the Board of Supervisors for Chesterfield County  
Martha Shickle, Executive Director for the Richmond Regional Planning District Commission  
Dennis Morris, Executive Director for the Crater Planning District Commission

24. Summary of Attachments:

Attachment A: Flow Frequency Memo, Ambient Data, Tier Determination and 303(d) Status  
Attachment B: Facility Diagrams and Summary of Operations  
Attachment C: Facility Location Map  
Attachment D: Site Visit Memo  
Attachment E: Effluent Data  
Attachment F: Effluent Limitation Analysis  
Attachment G: WET Testing Evaluation  
Attachment H: NPDES Permit Rating Work Sheet  
Attachment I: State and Federal Agency Coordination Correspondence  
Attachment J: OCPSF Guidelines (40 CFR 414 D & I)  
Attachment K: Owner and Local Government Comments